I CLAIM:

1. A fuel processing system, comprising:

a fuel processor adapted to produce a product hydrogen stream containing hydrogen gas from a feed stream containing a carbon-containing feedstock, water and an odorant;

at least one reforming catalyst bed within the fuel processor and adapted to produce a mixed gas stream containing hydrogen gas and other gases from the feed stream; and

a separation region within the fuel processor and adapted to receive the mixed gas stream and to separate the mixed gas stream into a hydrogen-rich stream containing at least substantially hydrogen gas and a byproduct stream containing at least a substantial portion of the other gases, and further wherein the product hydrogen stream is formed from the hydrogen-rich stream.

2. The fuel processing system of claim 1, wherein the odorant is adapted to have a distasteful odor.

3. The fuel processing system of claim 1, wherein the odorant is volatile.

4. The fuel processing system of claim 1, wherein the odorant is at least substantially miscible in the carbon-containing feedstock.

5. The fuel processing system of claim 4, wherein the odorant is completely miscible in the carbon-containing feedstock.

6. The fuel processing system of claim 1, wherein the odorant has a boiling point of less than approximately 300° C.

7. The fuel processing system of claim 6, wherein the odorant has a boiling point of less than 200° C.

8. The fuel processing system of claim 1, wherein the odorant has a molecular weight of less than 1000.

9. The fuel processing system of claim 1, wherein the odorant is at least substantially free of sulfur, phosphorous, and heavy metals.

10. The fuel processing system of claim 9, wherein the odorant is free of sulfur.

11. The fuel processing system of claim 9, wherein the odorant is free of phosphorous.

12. The fuel processing system of claim 9, wherein the odorant is free of heavy metals.

13. The fuel processing system of claim 1, wherein the odorant is adapted to have a strong and readily detectable odor even when present in concentrations of approximately 10 ppm.

14. The fuel processing system of claim 1, wherein the odorant includes at least one organic amine having at least one amine functional group.

15. The fuel processing system of claim 14, wherein the odorant includes an organic amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, n-butylamine, n-pentylamine, n-hexylamine, n-heptylamine, n-octylamine, and n-decylamine.

16. The fuel processing system of claim 1, wherein the odorant includes at least one organic amine having at least two amine functional groups.

17. The fuel processing system of claim 16, wherein the at least one organic amine is selected from the group consisting of 1,3-diaminopropane, 1,4-diaminobutane, 1,5-diaminopentane, and 1,7-diaminoheptane.

18. The fuel processing system of claim 1, wherein the feed stream includes a first stream containing the carbon-containing feedstock and the odorant and a second stream containing the water.

19. The fuel processing system of claim 1, wherein the feed stream includes a composite stream containing the carbon-containing feedstock, the odorant, and the water.

20. The fuel processing system of claim 1, wherein the carbon-containing feedstock includes at least one hydrocarbon or alcohol.

21. The fuel processing system of claim 20, wherein the carbon-containing feedstock includes methanol.

22. The fuel processing system of claim 1, wherein the separation region is adapted to produce the hydrogen-rich stream and the byproduct stream by a pressure-driven separation process.

23. The fuel processing system of claim 22, wherein the separation region is adapted to produce the hydrogen-rich stream and the byproduct stream via a pressure-swing absorption process.

24. The fuel processing system of claim 22, wherein the separation region includes at least one hydrogen-permeable membrane into contact with which the feed stream is passed, and further wherein the hydrogen-rich stream is formed from a portion of the mixed gas stream that passes through the membrane and the byproduct stream is formed from a portion of the mixed gas stream that does not pass through the membrane.

25. The fuel processing system of claim 24, wherein the separation region includes a plurality of hydrogen-permeable membranes.

26. The fuel processing system of claim 24, wherein the hydrogen-permeable membrane comprises at least one of palladium and a palladium alloy.

27. The fuel processing system of claim 26, wherein the hydrogen-permeable membrane comprises a palladium-copper alloy.

28. The fuel processing system of claim 1, wherein the fuel processor further includes a polishing region adapted to receive the hydrogen-rich stream and to increase the purity of the hydrogen gas therein to produce the product hydrogen stream.

29. The fuel processing system of claim 28, wherein the polishing region includes a methanation catalyst bed.

30. The fuel processing system of claim 28, wherein the polishing region includes a permeate reforming catalyst bed containing a reforming catalyst.

31. The fuel processing system of claim 30, wherein the polishing region further includes a methanation catalyst bed downstream from the permeate reforming catalyst bed.

32. The fuel processing system of claim 1, further comprising a fuel cell stack adapted to receive at least a portion of the product hydrogen stream and including a plurality of fuel cells adapted to produce an electric current therefrom.

33. The fuel processing system of claim 32, wherein the fuel cell stack includes at least one proton exchange membrane fuel cell.

34. The fuel processing system of claim 32, wherein the fuel cell stack includes at least one alkaline fuel cell.

35. In a fuel processing system containing a fuel processor adapted to produce a product hydrogen stream comprising hydrogen gas from a feed stream comprising a carbon-containing feedstock, the improvement comprising: the feed stream further comprising an odorant having a strong and detectable odor distinct from the carbon-containing feedstock.

36. The fuel processing system of claim 35, wherein the odorant is adapted to have a distasteful odor.

37. The fuel processing system of claim 35, wherein the odorant is volatile.

38. The fuel processing system of claim 35, wherein the odorant is at least substantially miscible with the carbon-containing feedstock.

39. The fuel processing system of claim 38, wherein the odorant is completely miscible with the carbon-containing feedstock.

40. The fuel processing system of claim 35, wherein the odorant has a boiling point of less than approximately 300° C.

41. The fuel processing system of claim 40, wherein the odorant has a boiling point of less than 200° C.

42. The fuel processing system of claim 35, wherein the odorant has a molecular weight of less than 1000.

43. The fuel processing system of claim 35, wherein the odorant is at least substantially free of sulfur, phosphorous, and heavy metals.

44. The fuel processing system of claim 43, wherein the odorant is free of sulfur.

45. The fuel processing system of claim 43, wherein the odorant is free of phosphorous.

46. The fuel processing system of claim 43, wherein the odorant is free of heavy metals.

47. The fuel processing system of claim 35, wherein the odorant is adapted to have a strong and readily detectable odor even when present in concentrations of approximately 10 ppm.

48. The fuel processing system of claim 35, wherein the odorant includes at least one organic amine having at least one amine functional group.

49. The fuel processing system of claim 48, wherein the odorant includes an organic amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, n-butylamine, n-pentylamine, n-hexylamine, n-heptylamine, n-octylamine, and n-decylamine.

50. The fuel processing system of claim 35, wherein the odorant includes at least one organic amine having at least two amine functional groups.

51. The fuel processing system of claim 50, wherein the at least one organic amine is selected from the group consisting of 1,3-diaminopropane, 1,4-diaminobutane, 1,5-diaminopentane, and 1,7-diaminoheptane.

52. The fuel processing system of claim 35, wherein the carbon-containing feedstock includes at least one hydrocarbon or alcohol.

53. The fuel processing system of claim 35, wherein the fuel processor is adapted to produce the product hydrogen stream via catalytic partial oxidation of the feed stream.

54. The fuel processing system of claim 35, wherein the feed stream further includes water.

55. The fuel processing system of claim 54, wherein the fuel processor includes at least one reforming region containing a reforming catalyst and adapted to produce a reformate stream from the feed stream.

56. The fuel processing system of claim 55, wherein the reforming catalyst is a steam reforming catalyst and the fuel processor is adapted to produce the reformate stream by steam reforming.

57. The fuel processing system of claim 55, wherein the reforming catalyst is an autothermal reformer and the fuel processor is adapted to produce the reformate stream by autothermal reforming.

58. The fuel processing system of claim 35, wherein the fuel processor includes a hydrogen-producing region that is adapted to receive the feed stream and to produce a mixed gas stream containing hydrogen gas and other gases therefrom, and further wherein the fuel processor further includes a separation region in which the mixed gas stream is separated into a hydrogen-rich stream containing at least substantially hydrogen gas and a byproduct stream containing at least a substantial portion of the other gases.

59. The fuel processing system of claim 58, wherein the separation region is adapted to produce the hydrogen-rich stream and the byproduct stream via a pressure-swing absorption process.

60. The fuel processing system of claim 58, wherein the separation region includes at least one hydrogen-permeable membrane into contact with which the mixed gas stream is passed, and further wherein the hydrogen-rich stream is formed from a portion of the mixed gas stream that passes through the membrane and the byproduct stream is formed from a portion of the mixed gas stream that does not pass through the membrane.

61. The fuel processing system of claim 60, wherein the separation region includes a plurality of hydrogen-permeable membranes.

62. The fuel processing system of claim 60, wherein the hydrogen-permeable membrane comprises at least one of palladium and a palladium alloy.

63. The fuel processing system of claim 62, wherein the hydrogen-permeable membrane comprises a palladium-copper alloy.

64. The fuel processing system of claim 58, wherein the product hydrogen stream is formed from the hydrogen-rich stream.

65. The fuel processing system of claim 58, wherein the fuel processor further includes a polishing region adapted to receive the hydrogen-rich stream and to increase the purity of the hydrogen gas therein to produce the product hydrogen stream.

66. The fuel processing system of claim 65, wherein the polishing region includes a methanation catalyst bed.

67. The fuel processing system of claim 65, wherein the polishing region includes a permeate reforming catalyst bed containing a reforming catalyst.

68. The fuel processing system of claim 67, wherein the polishing region further includes a methanation catalyst bed downstream from the permeate reforming catalyst bed.

69. The fuel processing system of claim 35, further comprising a fuel cell stack adapted to receive at least a portion of the product hydrogen stream and containing a plurality of fuel cells adapted to produce an electric current therefrom.

70. The fuel processing system of claim 69, wherein the fuel cell stack includes at least one proton exchange membrane fuel cell.

71. The fuel processing system of claim 69, wherein the fuel cell stack includes at least one alkaline fuel cell.

72. A feedstock for a fuel processing system containing at least one reforming catalyst bed, the feedstock comprising:

a carbon-containing feedstock comprising at least one alcohol or hydrocarbon; and

an odorant comprising at least one organic amine having at least one amine functional group, wherein the odorant is at least substantially miscible with the carbon-containing feedstock and has a boiling point of less than approximately 300° C.

73. The feedstock of claim 72, wherein the odorant is completely miscible with the carbon-containing feedstock.

74. The feedstock of claim 72, wherein the odorant is at least substantially free of sulfur, phosphorous, and heavy metals.

75. The feedstock of claim 72, further comprising water.

76. The feedstock of claim 72, wherein the odorant includes an organic amine selected from the group consisting of trimethylamine, triethylamine, tripropylamine, n-butylamine, n-pentylamine, n-hexylamine, n-heptylamine, n-octylamine, and n-decylamine.

77. The feedstock of claim 72, wherein the odorant includes at least one organic amine having at least two amine functional groups.

78. The feedstock of claim 77, wherein the at least one organic amine is selected from the group consisting of 1,3-diaminopropane, 1,4-diaminobutane, 1,5-diaminopentane, and 1,7-diaminoheptane.